Amendments to the Claims

1. (Previously presented) In an optical communication system, a method for extracting information from a baseband optical signal comprising:

applying, to an optical fiber, a subcarrier multiplexed baseband optical signal, said subcarrier multiplexed baseband optical signal composed of a modulated optical carrier including a payload without control information and a modulated optical subcarrier including control information without payload, the modulated optical subcarrier being at a subcarrier frequency which is separated from the modulation bandwidth of the optical carrier;

receiving the subcarrier multiplexed baseband optical signal at an input port of an optical circulator;

applying the subcarrier multiplexed baseband optical signal via an extraction port of the optical circulator to an optical filter including a Bragg grating;

optically separating the modulated optical subcarrier in the optical filter and directing the modulated optical subcarrier to an optical energy transducer while reflecting the modulated optical carrier back to the extraction port of the optical circulator; and

outputting the modulated optical carrier to an output port of the optical circulator.

2. (Canceled)

3. (Previously presented) In an optical communication system, a method for swapping control information of a baseband optical signal comprising:

applying, to an optical fiber, a subcarrier multiplexed baseband optical signal, the subcarrier multiplexed baseband optical signal composed of a modulated optical carrier having a payload without control information and a modulated optical subcarrier for control information without payload, the modulated optical subcarrier being at a subcarrier frequency which is separated from the modulation bandwidth of the optical carrier;

separating the modulated optical carrier from the modulated optical subcarrier by

receiving the subcarrier multiplexed baseband optical signal at an input port of an optical circulator,

applying the subcarrier multiplexed baseband optical signal via an extraction port of the optical circulator to an optical filter including a Bragg grating,

optically separating the modulated optical subcarrier in the optical filter and directing the modulated optical subc arrier to an optical energy transducer while reflecting the modulated optical carrier back to the extraction port of the optical circulator, and

outputting the modulated optical carrier to an output port of the optical circulator; and then

applying the modulated optical carrier to an optical modulator adapted for writing new subcarrier modulated control information.

4. (Previously presented) A method for controlling the propagation path of a baseband optical signal comprising:

applying, to an optical fiber, a subcarrier multiplexed baseband optical signal, the subcarrier multiplexed baseband optical signal composed of a modulated optical carrier having a payload without control information and a modulated optical subcarrier for control information without payload, the modulated optical subcarrier being at a subcarrier frequency which is separated from the modulation bandwidth of the optical carrier;

receiving the subcarrier multiplexed baseband optical signal at the input to a routing element;

extracting the modulated optical subcarrier control information by

receiving the subcarrier multiplexed baseband optical signal at an input port of an optical circulator,

applying the subcarrier multiplexed baseband optical signal via an extraction port of the optical circulator to an optical filter including a Bragg grating,

optically separating the modulated optical subcarrier in the fiber Bragg grating and directing the modulated optical subcarrier to an optical energy transducer while reflecting the modulated optical carrier back to the extraction port of the optical circulator, and

outputting the modulated optical carrier to an output port of the optical circulator;

changing the wavelength of the optical carrier for the payload in response to the control information in a process not including converting said modulated optical carrier to electronic form; and

directing the optical carrier for the payload along one of a plurality of output paths from the routing element responsive to the control information.

5. (Original) The method according to claim 4 further comprising the step of modulating the directed optical carrier to add a subcarrier containing new control information.

6. (Previously presented) A device for extracting information in an optical subcarrier comprising:

a fiber adapted to carry a subcarrier multiplexed baseband optical signal, the subcarrier multiplexed baseband optical signal composed of a modulated optical carrier for a payload without control information and a modulated optical subcarrier for control information without payload, the modulated optical subcarrier being at a subcarrier frequency which is separated from the modulation bandwidth of the optical carrier;

an optical circulator having an input port for receiving the subcarrier multiplexed baseband optical signal from the fiber, a bi-directional extraction port and an output port;

an optical filter including a Bragg grating optically coupled to said extraction port of said optical circulator and operative to optically separate the modulated optical subcarrier from the subcarrier multiplexed baseband optical signal and to reflect the modulated optical carrier to the optical circulator; and

an optical energy transducer optically coupled to receive the modulated optical subcarrier.

7. (Previously presented) The device according to claim 6 wherein the optical energy transducer is a photodetector for generating a electrical signal proportional to the signal of the modulated subcarrier and further including:

a detector for detecting the information modulating the electrical signal.

8. (Currently amended) In a optical communication system, a device for swapping control information [[of a]] comprising:

an optical subcarrier receiver including a fiber adapted to carry a subcarrier multiplexed baseband optical signal, the subcarrier multiplexed baseband optical signal composed of a modulated optical carrier for a payload without control information and a modulated optical subcarrier for control information without payload, the modulated optical subcarrier being at a subcarrier frequency which is separated from the modulation bandwidth of the optical carrier;

an optical circulator having an input port for receiving the subcarrier multiplexed baseband optical signal from the fiber, a bi-directional extraction port and an output port;

an optical filter including a Bragg grating optically coupled to said extraction port of said optical circulator and operative to optically separate the modulated optical subcarrier from the subcarrier multiplexed baseband optical signal and to reflect the modulated optical carrier to the optical circulator; [[and]]

an optical energy transducer optically coupled to receive the modulated optical subcarrier; and

a means for modulating the modulated optical carrier to add new information contained in a new modulated optical subcarrier.

9. (Previously presented) An optical routing device adapted for controlling the wavelength and manner of propagation of a baseband optical signal, comprising:

an optical subcarrier receiver according to claim 7;

a controller for controlling other components in response to the control information extracted by said optical subcarrier receiver; and

a tunable optical source coupled to said controller, adapted for emitting an optical signal with a modulation proportional to the modulated optical carrier at a wavelength dictated by the control information in a process not including converting said modulated optical carrier to electronic form.

10. (Original) The device of claim 9 wherein the tunable optical source comprises:

a tunable laser optically coupled to a semiconductor optical amplifier.

11. (Original) The device of claim 9 further comprising a wavelength switch having at least one input and a plurality of outputs, the switch being optically coupled to the tunable optical source and adapted for directing an optical signal on any of its inputs to a specific output in accordance with the wavelength of the input signal.

12. (Original) The device of claim 11 wherein the wavelength switch is an array waveguide grating.

13. (Original) The device of claim 11 further comprising an array of optical modulators coupled to the outputs of the wavelength switch, said modulators adapted for further modulating the modulated optical carrier signal to add additional information.

14. (Canceled)

15. (Previously presented) The method according to claim 3, further comprising detecting using an output of said optical energy transducer a low-frequency electrical component of said modulated optical subcarrier.

17. (Previously presented) The method according to claim 7, further comprising a low-frequency detection system including said optical energy transducer detecting a low frequency electrical component of said modulated optical subcarrier.

18. (Previously presented) The method according to claim 8, further comprising a lowfrequency detection system including said optical energy transducer and detecting a low frequency electrical component of said modulated optical subcarrier.

19. (Previously presented) A device for extracting information in an optical subcarrier in an optical input signal including a payload signal modulated on an optical carrier and a control signal subcarrier multiplexed on said optical carrier at an optical subcarrier frequency outside the modulation bandwidth of said payload signal, comprising:

an optical circulating having an input port receiving the optical input signal, a bidirectional port, and an output port;

an optical filter connected to said bidirectional port tuned to reflect said modulation bandwidth of said optical carrier and to transmit in a filter output signal said subcarrier control signal; and

a detection system including an optical energy transducer receiving said filter output signal and detecting a low-frequency modulation component of said filter output signal.

20. (Previously presented) The device according to claim 19, wherein said detection system includes a low-pass electrical filter receiving an output of said optical energy transducer.